liver, also infestation of *Physopsis africana* by water containing the miracidia of *Schistosoma haematobium*; here the mature cercariæ were found six weeks later.—R. D. **Aitken**: The water relations of the pine (*Pinus pinaster*) and silver-tree (*Leucadendron argenteum*). The conductivity of the wood for water, rate of transpiration, total area of leaf-surface, and sectional area of wood have been determined for similar twigs of pine and silver-tree. Under the experimental conditions pine leaves exerted a much greater suction force, calculated in one instance to be about four times that exerted by the silver-tree leaves. The latter are less able to resist drying than pine leaves, in which the rate of transpiration very rapidly diminishes when the twig is not supplied with water to a much lower level than in a silver-tree twig under identical conditions.—J. W. C. **Gunn**: The action of *Eucomis undulata*. *E. undulata* contains a large amount of a sapoglucoside, soluble in water and 90 per cent. of spirit. It is a powerful hæmolytic agent. Absorption of the extract from the stomach and intestines and from the subcutaneous tissues is very slow; intravenous injections are actively poisonous, and produce symptoms like other saponin bodies.—T. J. **Mackie**: A study of the *Bacillus coli* group, with special reference to the serological characters of these organisms. The paper is a detailed record of investigations on the *B. coli* group with reference to their (1) biological classification, (2) serological characters, and (3) mutations. The biological characters of 246 strains of gram-negative, aerobic, non-sporing, and non-liquefying glucose-fermenting bacilli (not including specific pathogens of this class) were studied. Four main sub-groups could be recognised: (*a*) Gas-producing, indol-forming, and non-inosite-fermenting. (*b*) Gas-producing, non-indol-forming, and non-inosite-fermenting. (*c*) Gas-producing and inosite-fermenting. (*d*) Non-gas-producing (anaerogenes types). The serological characters studied were (1) the agglutination and (2) complement deviation reactions of immune sera to certain of the commoner varieties. These observations proved of great interest from the purely immunological point of view, and also threw some further light on the biological relationships of the various types of coliform bacilli. The comparative resistance of various types to brilliant green was correlated with the grouping determined by cultural and serological tests. Mutations among these organisms were investigated, and afforded some explanation of the great diversity of cultural types and of the high degree of specialisation in the serological characters of individual strains.—E. **Newbery**: Note on over-voltages. Over-voltage appears to be a function independent both of the gas liberated and of the metal in question, and completely determined by valency alone. Whether the valency of the gas is involved or not is still an open question, since all gaseous ions used were monovalent. The over-voltage compounds probably carry excess electrons, and the addition of each electron produces a definite increment in the single potential, which increment is dependent only upon the number of free valency electrons present in the atom of the electrode or ion of the over-voltage compound.

Books Received.

Manual of Tropical and Subtropical Fruits: Excluding the Banana, Coconut, Pineapple, Citrus Fruits, Olive, and Fig. By W. Popenoe. (Rural Manuals.) Pp. xv+474+xxiv plates. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 30*s.* net.

The Principles of Preventive Medicine. By Prof. R. T. Hewlett and Dr. A. T. Nankivell. Pp. viii+536. (London: J. and A. Churchill.) 21*s.* net.

Root Development in the Grassland Formation: A Correlation of the Root Systems of Native Vegetation and Crop Plants. By Prof. J. E. Weaver. (Publication 292.) Pp. 151+plates. (Washington: Carnegie Institution.)

The New Physics. By Dr. A. C. Crehore. Pp. xii+111. (San Francisco: *Journal of Electricity.*) 2 dollars.

Physics of the Air. By Prof. W. J. Humphreys. Pp. xi+665. (Philadelphia: J. B. Lippincott Co.) 5 dollars.

The Physico-Chemical Properties of Steel. By Prof. C. A. Edwards. Second edition. Pp. xii+281. (London: C. Griffin and Co., Ltd.) 21*s.* net.

The Platinum Metals. By A. D. Lumb. (Imperial Institute Monographs on Mineral Resources.) Pp. ix+63. (London: J. Murray.) 3*s.* 6*d.* net.

Das Naturbild der Neuen Physik. By Prof. A. Haas. Pp. v+114. (Berlin and Leipzig: W. de Gruyter and Co.) 4.05 schill.

The Northern D'Entrecasteaux. By D. Jenness and the late Rev. A. Ballantyne. Pp. 219. (Oxford: Clarendon Press.) 12*s.* 6*d.* net.

The Progress to Geography. Edited by Dr. R. Wilson. Stage iii.: Myself and my Country: A Study in Civic Geography. Pp. 224. 3*s.* 6*d.* Stage iv.: The British World. Pp. 256. 4*s.* (London: Macmillan and Co., Ltd.)

Recent Advances in Organic Chemistry. By Prof. A. W. Stewart. Fourth edition. Pp. xvi+359. (London: Longmans, Green and Co.) 21*s.* net.

Department of the Interior. United States Geological Survey. Bulletin 597: Geology of Massachusetts and Rhode Island. By B. K. Emerson. Pp. 289+x plates. Professional Paper 96: The Geology and Ore Deposits of Ely, Nevada. By Arthur C. Spencer. Pp. 189+xv plates. Professional Paper 99: Chemical Analyses of Igneous Rocks. Published from 1884 to 1913 inclusive. By H. S. Washington. Pp. 1201. Professional Paper 111: The Ore Deposits of Utah. By B. S. Butler and others. Pp. 672+lvii plates. (Washington: Government Printing Office.)

La Chimie et la Vie. By G. Bohn and Dr. A. Drzewina. Pp. 275. (Paris: E. Flammarion.) 7.50 francs.

Laboratory Manual of the Technic of Basal Metabolic Rate Determinations. By Dr. W. M. Boothby and Dr. I. Sandiford. Pp. 117. (Philadelphia and London: W. B. Saunders Co.) 24*s.* net.

Advanced Lessons in Practical Physiology for Students of Medicine. By Dr. R. Burton-Opitz. Pp. 238. (Philadelphia and London: W. B. Saunders Co.) 18*s.* net.

A Course of Practical Physiology for Agricultural Students. By J. Hammond and E. T. Halnan. Pp. 106. (Cambridge: At the University Press.) 4*s.* 6*d.* net.

Girolamo Saccheri's Euclides Vindicatus. Edited and translated by Dr. G. B. Halsted. Pp. xxx+246. (Chicago and London: The Open Court Publishing Co.) 10*s.* net.

The Early Mathematical Manuscripts of Leibniz. Translated from the Latin Texts published by Carl Immanuel Gerhardt, with critical and historical notes by J. M. Child. Pp. iv+238. (Chicago and London: The Open Court Publishing Co.) 7*s.* 6*d.* net.

The Reversal of Halphen's Transformation. By H. E. J. Curzon. Pp. 15. (London: Constable and Co., Ltd.) 1*s.* net.

Dead Man's Plack and an Old Thorn. By W. H.

© 1920 Nature Publishing Group

Hudson. Pp. vii+205. (London and Toronto: J. M. Dent and Sons, Ltd.; New York: E. P. Dutton and Co.) 7*s*. 6*d*. net.

Optical Methods in Control and Research Laboratories. Pp. 30. (London: Adam Hilger, Ltd.) 1*s*. 6*d*. net.

A System of Physical Chemistry. By Prof. W. C. McC. Lewis. (In 3 vols.) Vol. ii.: Thermodynamics. Third edition. Pp. viii+454. (London: Longmans, Green and Co.) 15*s*. net.

Department of Scientific and Industrial Research. Advisory Council. Report of the Lubricants and Lubrication Inquiry Committee. Pp. 126+3 plates. (London: H.M. Stationery Office.) 2*s*. 6*d*. net.

Department of Scientific and Industrial Research. Food Investigation Board. Special Report No. 4. Interim Report on Methods of Freezing Fish, with Special Reference to the Handling of Large Quantities in Gluts. Pp. 50+4 plates. (London: H.M. Stationery Office.) 1*s*. 6*d*. net.

Benzol: Its Recovery, Rectification, and Uses. By S. E. Whitehead. Pp. xiv+209. (London: Benn Bros., Ltd.) 12*s*. 6*d*. net.

An Educated Nation. By Basil A. Yeaxlee. (The World of To-day.) Pp. 80. (London: Oxford University Press.) 2*s*. 6*d*.

Never Grow Old: How to Live for more than One Hundred Years. By Dr. L. H. Goizet. Pp. 191. (New York and London: G. P. Putnam's Sons.) 10*s*. net.

Zoology: An Elementary Text-book. By Sir A. E. Shipley and Prof. E. W. MacBride. Fourth edition. Pp. xx+752. (Cambridge: At the University Press.) 20*s*. net.

Countryside Rambles. By W. S. Furneaux. Pp. lvi+186. (London: G. Philip and Son, Ltd.) 3*s*. 6*d*. net.

Psychology and Mystical Experience. By Prof. J. Howley. Pp. xi+275. (London: Kegan Paul and Co., Ltd.; St. Louis, Mo.: B. Herder Book Co.) 10*s*. 6*d*. net.

Mineralogy: An Introduction to the Study of Minerals and Crystals. By Prof. E. H. Kraus and Dr. W. F. Hunt. Pp. xiv+561. (New York and London: McGraw-Hill Book Co., Inc.) 27*s*.

Geology of the Non-Metallic Mineral Deposits other than Silicates. By A. W. Grabau. Vol. i.: Principles of Salt Deposition. Pp. xvi+435. (New York and London: McGraw-Hill Book Co., Inc.) 30*s*.

Diary of Societies.

THURSDAY, December 16.

Royal Society of Medicine (Dermatology Section), at 5.

Royal Aeronautical Society (at Royal Society of Arts), at 5.30.—H. Ricardo: Possible Developments in Aircraft Engines.—A. J. Rowledge: The Instalment of Aeroplane Engines.

Institution of Mining and Metallurgy (at Geological Society), at 5.30.—E. J. Prior: Some Sources of Error in Alluvial Boring.—R. E. Palmer: Some Observations on Mining by the Opencast or Stripping Method.

Institution of Electrical Engineers (at Institution of Civil Engineers), at 6.—Discussion: Report on the Heating of Buried Cables.

Concrete Institute, at 7.30.—H. J. Deane: Special Applications of Reinforced Concrete in Docks, with Special Reference to the Reinforced Concrete Gates at Tilbury Docks.

Institution of Automobile Engineers (Graduates' Meeting) (at 28 Victoria Street), at 8.—T. E. B. Whiting: Carburation.

Chemical Society (at Institution of Mechanical Engineers), at 8.—Sir R. Robertson: Lecture: Some Properties of Explosives.

Röntgen Society (in Physics Lecture Theatre, University College), at 8.15.—The Reduction of Radiographic Exposures to 1/25th and Less by Means of a New Type of X-Ray Plate. Part I. by Dr. L. Levy and D. W. West. Part II. by T. Thorne Baker.

Harveian Society of London (at 11 Chandos Street, W), at 8.30.—Dr. C. M. Wilson, Dr. C. Buttar, and Others: The Future of the Poor-law Infirmary.

FRIDAY, December 17.

Society of Medical Officers of Health (at 1 Upper Montague Street), at 5.—Lt.-Col. H. R. Kenwood: Presidential Address to the Navy, Army, and R.A.F. Hygiene Group of the Society.

Institution of Mechanical Engineers, at 6.—Dr. W. J. Walker: Thermodynamic Cycles in Relation to the Design and Future Development of Internal-combustion Motors.

Junior Institution of Engineers (at Royal United Service Institution), at 7.30.—Lord Weir of Eastwood: Some Reflections on our Industrial Situation (Presidential Address).

Royal Society of Arts, at 8.—Col. R. J. Stordy: The Breeding of Sheep, Llamas, and Alpacas in Peru, with a view to supplying Improved Raw Material for the Textile Trades.

Royal Society of Medicine (Electro-Therapeutics Section), at 8.30.—Adjourned Discussion: Radio-Therapy.—Dr. R. Morton: Recent Developments in Deep Therapy.—Dr. L. Martindale: Technique of X-ray Therapy of Fibroids.

Royal Society of Tropical Medicine and Hygiene (at London School of Tropical Medicine), at 8.30.—Laboratory Meeting.

SATURDAY, December 18.

Physiological Society (at St. Thomas' Hospital), at 4.

MONDAY, December 20.

Surveyors' Institution, at 7.—H. S. Logsdon: Rating as affected by Recent Legislation.

Aristotelian Society (at University of London Club, 21 Gower Street), at 8.—Prof. T. P. Nunn and Prof. H. Wildon Carr: Discussion on Prof. Alexander's "Space, Time, and Deity."

Royal Society of Arts, at 8.—A Chaston Chapman: Micro-organisms and Some of their Industrial Uses (Cantor Lecture).

Institution of Automobile Engineers (London Graduates' Meeting) (at 28 Victoria Street), at 8.—W. H. Wardall: Cylinder and Piston Wear.

Royal Geographical Society (at Æolian Hall), at 8.30.—F. Debenham: The Future of Polar Research.

TUESDAY, December 21.

Royal Society of Medicine, at 5.—General Meeting of Fellows.

Royal Photographic Society of Great Britain, at 7.—Dr. D. J. Reid: Further Developments in Systematic Exposure in Photo-micrography.

CONTENTS.

PAGE
The Practical Teaching of Science 493
Vitalism versus Mechanism. By J. J. 494
A Study of Weeds. By A. D. H. 496
Facts and Theories for the Social Worker 497
Our Bookshelf 498
Letters to the Editor:—
  Heredity and Acquired Characters.—**Sir E. Ray Lankester, K.C.B., F.R.S.; Prof. E. W. MacBride, F.R.S.** 500
  The Energy of Cyclones. (*With Diagram.*)—**R. M. Deeley** 502
  Name for the Positive Nucleus.—**Prof. Frederick Soddy, F.R.S.** 502
  The Stereoscopic Appearance of Certain Pictures.—**A. P. Trotter** 503
  Luminosity by Attrition.—**James Weir French** . . 503
  Tragic Death Feint of a Snake.—**Dr. W. E. Bartlett** 503
  The Alkaloids of *Senecio jacobaea*.—**Dr. A. H. MacKay** 503
Instruments for the Navigation of Aircraft. (*Illustrated.*) **By G. M. B. Dobson** 504
Industrial Research Associations. VI. The Glass Research Association. By Edward Quine . . . 506
The Quantum Theory 508
Obituary:—
  Spencer Pickering, F.R.S. By A. D. H. . . . 509
  William Arthur Haward 510
Notes 511
Our Astronomical Column:—
  Tidal Friction and the Lunar Acceleration 515
  The Solar Spectrum from 6500 Å. to 9000 Å. . . . 515
Anthropology at the British Association. By E. N. F. 516
Smoke Abatement and Housing Schemes. By J. B. C. 517
Work of the Analytical Laboratory, Cairo 51
The Problem of Soaring Flight 518
University and Educational Intelligence . . . 518
Societies and Academies 520
Books Received 523
Diary of Societies 524

© 1920 Nature Publishing Group